INDONESIAN JOURNAL OF GEOGRAPHY

RESEARCH ARTICLE

Sustainable Tourism Development in Indonesia: Bibliometric Review and Analysis

Megandaru Widhi Kawuryan[1*], Aqil Teguh Fathani[2], Eko Priyo Purnomo[3], Lubna Salsabila[4], Novia Amirah Azmi[5], Deni Setiawan[6], Mochammad Iqbal Fadhlurrohman[7]

[1*]Senior Lecturer at Department of Government Information Technology, Institute Pemerintahan Dalam Negeri, Jatinangor, Indonesia. [3]Senior Lecturer at Universitas Muhammadiyah Yogyakarta, Indonesia. [2,3,4,6,7]Department of Government Affairs and Administration, Jusuf Kalla School of Government, Universitas Muhammadiyah Yogyakarta, Indonesia. [5]Department of Communication Studies, Universitas Perintis Indonesia, Padang-Indonesia.

Abstract. Along with the many potentials in developing the tourism sector and impressive research in the tourism sector, in the last ten years, interest in studying and researching the sustainability of the development of Indonesia's tourism sector has continued to increase significantly. However, despite the increase, the scientific literature published so far has not evaluated in detail the sustainability of Indonesia's tourism development. This study analyzed 861 articles published until February 2021 in the Scopus database on Indonesia's tourism development sustainability. In conducting the analysis, the VosViewer software was used to find results about the most contributing authors, the number of citations, regions, organization, publica-tions and co-occurrences of keywords that could provide new gaps in future research. The results obtained showed trends and impacts of literature published to date, then new gaps/novelties for further research related to the themes of sport tourism, mangrove tourism, sharia tourism and Indonesia's tourism resilience were found. With these results, the next researchers should raise the theme so that Indonesian tourism's sustainability can develop adequately to have a more significant impact in the future.

Correspondent email:
megandaru@ipdn.ac.id

1. Introduction

The purpose of this study is to conduct a bibliometric analysis of the sustainability of tourism development. This bibliometric research focuses on Indonesia's tourism development sustainability using published data from the Scopus database. Pritchard first coined the term "bibliometric" in 1969 (Tang et al., 2018). Bibliometrics refers to a field that investigates clusters of publications with quantitative analysis methods. Many of the bibliometric indicators used in this paper include the number of publications, citations and the average number of citations per year (Hirsch, 2005). The number of publications may reflect the author and the institution's contribution, whereas the number of citations and average citation often correlates with the quality and critical influence. The use of bibliometric analysis is considered important because it can measure and analyze using a statistical scope to find results in the form of research scope and focus and find research results that are widely researched and rarely researched (Gümüş et al., 2020).

In the bibliometric study, there are two approaches to bibliometrics, namely performance analysis and science mapping. Performance analysis includes publication and distribution of citations in terms of authors, countries, and institutions, while science mapping uses visualization software to present the subject's structure (Noyons et al., 1999). Much bibliometric software has been developed, such as VosViewer (Eck & Waltman, 2020), CiteSpace (Liu, 2013), which help researchers analyze data in various scientific fields, especially in social sciences. In this study, the researcher used VosViewer as the software used in data analysis in the sustainability of tourism development, especially in Indonesia

The development of tourism research continues to increase every year (Table 2) due to the seriousness of managing and developing valuable assets and the future for a global and local economy (Buckley, 2012). It is crucial in terms of socio-cultural and community welfare because it offers sustainable development prospects (UNWTO, 2020). Globally, international tourist mobility data exceeded 1.5 billion in 2019, increasing 3.8% year-on-year (UNWTO, 2020). Likewise, this figure is expected to continue to increase, with an estimated 1.8 billion tourists by 2030

(Trupp & Dolezal, 2020), although it could be revised after the impact of the COVID-19 pandemic (Gössling et al., 2020). As for Indonesia, the tourism sector is a leading sector (Budimanta, 2019) because it can attract international tourists to visit large numbers.

With a significant increase in the number of tourist visits each year, it is a significant advantage for Indonesia in terms of state revenue, strengthening the Rupiah exchange rate and availability of employment opportunities (BPS, 2020) (Table 1).

However, since the COVID-19 pandemic entered Indonesia in March 2020 (Arief, 2020), the negative impact of COVID-19 has not only been limited to the loss of human life but also includes short and long-term social, economic and political impacts (Prawoto et al., 2020). COVID-19 has an impact on Indonesia's economic growth activities to -2.07% in 2020 (Rosana, 2021) and a decrease in tourist arrivals of -87.8% (Year on year) (Aipassa, 2020). The high concern in responding to the tourism sector and its growth is an area of current importance. Therefore, a lot of literature highlights the various impacts of tourism (Farzanegan et al., 2020) (Priyanto et al., 2020)(Jamal & Budke, 2020). Likewise, an essential aspect of tourism is sustainability, as it is considered a way to meet the needs of stakeholders, taking into account the economic impacts and current and future socio-cultural and environmental conditions (Higgins-Desbiolles et al., 2019) (UNWTO, 2020). As a result, sustainability and its growth limits are a constant concern in

the tourism sector (Cucculelli & Gof, 2015)(Asmelash & Kumar, 2019). Academics and researchers study and analyze the relationship between tourism and COVID-19 and analyze the impact of national and local tourism (Nasution et al., 2020)(Olivia et al., 2020).

In recent years, several literature reviews on sustainable tourism development, especially in the world and in Asia, have been completed (Yoopetch & Nimsai, 2019), but only a few have discussed Indonesia. Scopus explicitly discusses literature studies with the theme "the sustainability of tourism development in Indonesia." Therefore, the review identifies the latest topics covered in the current research literature. In this way, bibliometric tools can be a relevant way of identifying existing and emerging fields, as well as identifying research groups and researchers to show how different areas of thought might emerge based on institutional characteristics and authors (Fahimnia et al., 2015), identify the most influential researchers in a group paved the way for defining additional areas of study that emerged by addressing more recent topics discussed.

2. Conceptual Framework

This conceptual framework approach is used to build a correlation between tourism and sustainable development, especially in Indonesia. Following the principles established by the United Nations World Tourism Organization (UNWTO), sustainable tourism development is a
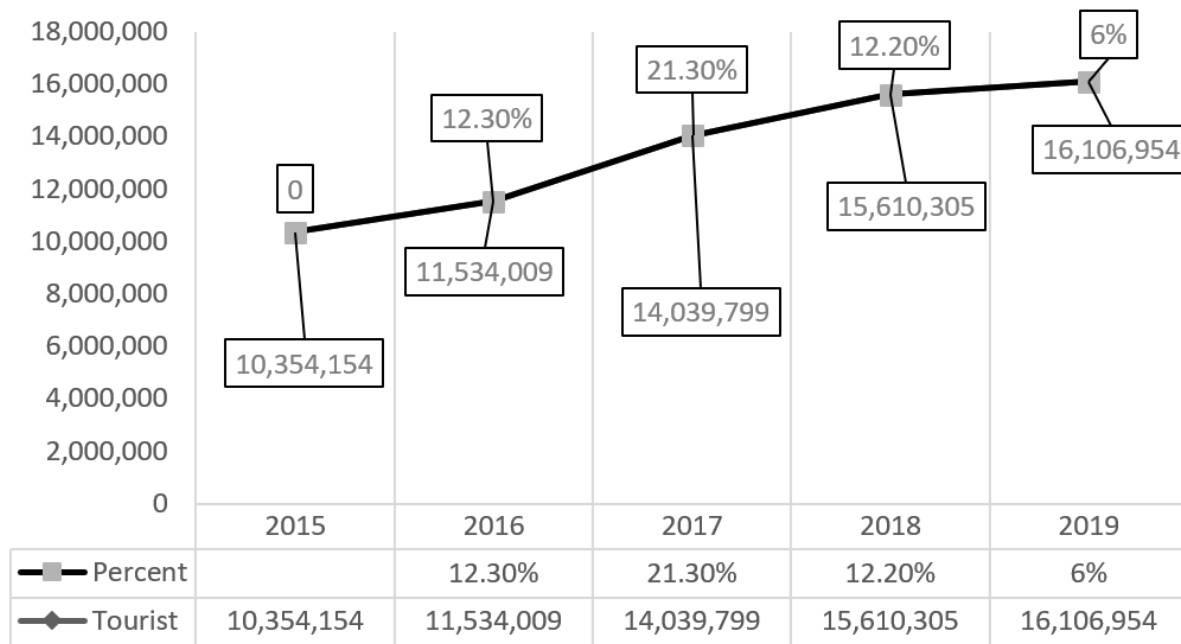

Figure 1. Foreign Tourist Visits (Source: Ministry of Tourism Indonesia, 2020)

Table 1. Tourism's Indonesia Contribution

	2015	2016	2017	2018	2019
GDP (%)	4.3	4.2	4.11	4.5	5.5
Foreign Exchange (USD)	12.2 billion	13.6 billion	15.24 billion	19.8 billion	20 billion
Labour (Million)	11.4	11.8	12.4	12.7	13

(Source: Ministry of Tourism Indonesia, 2020)

development that meets the needs of current and future tourists, protects the sustainability of tourist destinations and seeks to increase the potential and opportunities for future tourism (UNWTO, 2017). The discussion of sustainable tourism is closely related to environmental values, socio-cultural sustainability (Aimagambetov et al., 2017)(Purnomo et al., 2020) and prioritizing local communities' welfare (Amerta et al., 2018)(Hall, 2019).

Also, the objective of sustainable development is to minimize environmental damage, protect the environment and nature, which tends to experience damage during tourism activities (Sahu et al., 2014), such as an increase in waste which results in environmental pollution, sanitation and tourists' ethics-aesthetics (Suntikul et al., 2016) (Purnomo et al., 2021). However, the empirical literature analyzes the fundamental questions for sustainable tourism development, and many of the relevant questions in this area remain unresolved. Without forgetting its origins related to environmental quality maintenance (Grilli et al., 2021), it must not harm future generations (Bell & Morse, 2008)(Purnomo et al., 2019).

Furthermore, assessing the environmental, socio-cultural and community welfare in the long term needs serious attention (Vehbi, 2012). Several researchers have researched the sustainability of tourism, especially in Indonesia (Rasyid, 2019) because it is the Indonesian government's leading sector (Budimanta, 2019) and as a paradigm characterize the future (Pan et al., 2018). For reasons like this, in recent years, there has been an increase in studying the sustainability of tourism by highlighting the difficulties in its development (Buckley, 2012)(Niñerola et al., 2019) and identifying it as a fundamental tool for a competitive sector area (Cucculelli & Gof, 2015).

In recent years, many researchers have tried to link and determine the influence, impact and innovation of sustainable tourism development in Indonesia (Phelan et al., 2020)(Goeltom et al., 2020)(Fatimah & Ayu, 2020). This approach has been used to demonstrate the growing importance of this relationship by identifying research gaps and specific areas of interest, linking literature between authors, topics, and search fields have been resolved through content analysis and descriptive statistics (de Jesus et al., 2016). Although this relationship has been studied extensively in the previous literature, it is still interesting to study the size, growth, and distribution of existing scientific documents and the groups' structure in this document.

Therefore, this study aims to determine the various current research in the literature on sustainable tourism development in Indonesia. In this way, the results will make it possible to identify areas of interest for current research and to know the scope that has not been studied and thus, serve as a differentiator for future research directions.

3. Methods

The bibliometric review's main objective is to assess the existing empirical literature body to determine possible research gaps and highlight knowledge limitations (Fahimnia et al., 2015). The bibliometric analysis uses quantitative methods to classify data, produces a representative summary, and is recognized as a useful approach for analyzing the performance of journals, institutions, authors, and the characteristics of research topics (Li et al., 2020). In

this research, to measure the influence of publications, authors, and journals, the researcher analyzed various bibliometric indicators, including some publications, total citations, citations per article, significant journals, most relevant universities, and most influential countries using VosViewer software, used in data analysis on the sustainability of tourism development, especially in Indonesia.

Furthermore, the data was collected using the Scopus data search engine (Scopus Database), which discusses "Sustainable Development", "Sustainable Tourism", "Tourism Development", "Indonesia's Tourism," and "Tourism". The Scopus database is the most extensive because it has many abstracts from various peer-reviewed literature such as scientific journals, literature articles, books, and international conference proceedings (Liao et al., 2019). Even though there are many studies in the database, the researcher still filtered them so that this study only focused on publications from articles (Article Journal, Conference Paper, Conference Review, and Review Article) published and indexed in Scopus with the keyword Sustainable Tourism Development of Indonesia.

Initial Search Result

Initial Search Results Initial searches were carried out by the researcher using keywords to obtain results in the first stage before screening (Pendit, 2006). In this study, the researcher used keywords to collect data related to research, and these keywords were entered into the Scopus database search engine (Article Title, Abstract, Keywords) (Falagas et al., 2008)(Wang et al., 2020), namely "Sustainable Tourism", "Tourism Indonesia", "Tourism Development" and "Tourism Indonesia" (Table 2).

Refinement of Search Results

Refinement of Search Results is a form of refinement or filtering of the initial search results to find more specific results. The purpose of narrowing this search is to focus more on research objectives to obtain good research results (Pendit, 2006). In this study, a systemic review approach, guided by a set of inclusion and exclusion criteria, was used to screen irrelevant studies to the objectives, questions, and scope of the bibliometric search. When conducting bibliometric research analysis, the first step is to evaluate the available database, namely Scopus, then make adjustments and the consequences for using that database (Sánchez et al., 2017). From the search results of 17,732 articles, the researcher conducted a filter to narrow down and focus their research on "Sustainable Tourism Development of Indonesia". This filtering was done by

Table 2. Initial Search Result

Search Keywords	Search Results (Number of Paper)
Sustainable Tourism Development	10,472
Tourism Develop-ment	5,388
Tourism Indonesia	1,872
Total	17,733

looking at the articles used in English, published articles, or In Press, although some articles also fell into business, social, sociology, government, law and social issues.

The concept of development in the theory of Sustainable Development Goals aims to improve human life quality, prosper the current generation, and prepare a decent condition for future generations (Sachs, 2015). A solution is needed to develop tourism potentials in each region to be maximally utilized and managed for the community's welfare to carry out tourism development (Yoeti, 2000). Therefore, the researcher decided to focus on bibliometric analysis on tourism development, especially in Indonesia.

The results of the successive screening of selected publications on research on Indonesian tourism development in various international journals, which consist of open access and subscription publication years, obtained 861 articles consisting of 493 Journal Articles, 295 Conference Papers, 23 Book Chapters, 21 Conference Review, 17 Review Article and 10 Books. Using this method, the results obtained for 861 references in Scopus form the basis for conducting this empirical research.

Data Extraction

Data extraction is the process of selecting and retrieving data from several sources. In this case, it is the process of selecting and retrieving data from the Scopus database. At the end of each search, the narrowed database was then saved into a separate marked list with Scopus, and it was used to visualize the output, categorize and rank the results. Furthermore, after the data was extracted and exported and re-filtered by VosViewers, it was to visualize the data, create and view data networks based on the data collected (Pan et al., 2018).

Data Analysis

To observe the evolution of the empirical field of knowledge analyzed in this study, the researcher has adopted an inductive approach through a bibliometric analysis of scientific production (Serrano et al., 2019). Likewise, this study's literature classification is complemented by real data analysis using a deductive approach (Fahimnia et al., 2015). Therefore, this study aims to combine inductive and deductive approaches through a data collection method called triangulation, combining different data sources and different authors (Scheffler & Brunzel, 2020). Data analysis was carried out through bibliometric analysis, which is presented in the results and discussion menu. This analysis was carried out with VosViewer because of its ability to work efficiently with large data sets and provide various visualizations, analyses, and innovative research (Fahimnia et al., 2015). Bibliometric reviews using VosViewer were also used to identify published literature and significant network associations. Using bibliometric techniques, research trends in health, information technology, education, monetary, fiscal, defense, agriculture, land and land conditions, and foreign relations can also include social sciences that study tourism. It is also a useful tool for conducting scientific map analysis of journal publications because it has a powerful graphical user interface and map display capabilities (Wang et al., 2020).

Published articles were further categorized and reviewed through many variables. The researcher assessed the origin and state of the research discipline in terms of citation metrics, top publications, journals, type of publication, country or region, research field, and identification patterns in the production of knowledge-related policy research theories. Therefore, a similar method was applied to review the literature on tourism sustainability, evaluate tourism products and tourism activities, and create new tourism sector ideas. The researcher decided to complete the bibliometric analysis with two network visualization analyzes, map density based on co-occurrence of keywords and map density based on network data linked by co-authored items. The co-occurrence analysis of keyword terms represents the number of times two terms appear
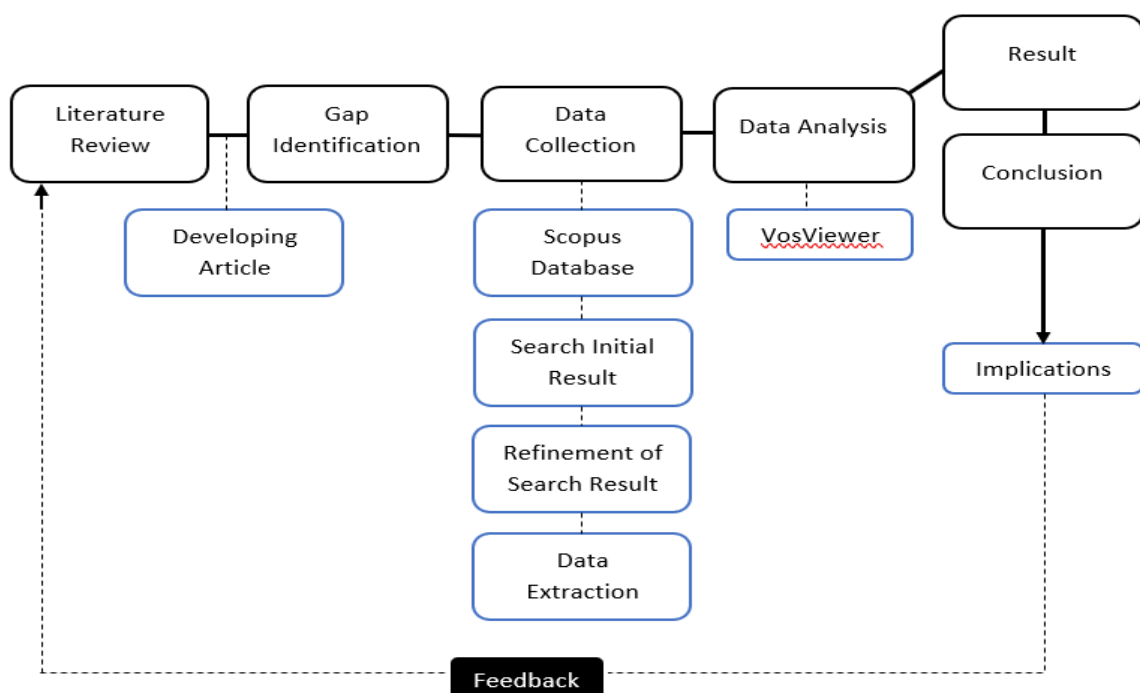

Figure 2. Research Analysis

together in a set of posts (Sun & Yuan, 2020). For this purpose, density maps based on co-occurrences of keywords are used. In particular, the complete count method is applied, meaning that each link of events together has the same weight (Shah et al., 2019). For its part, analysis of co-author networks shows the number of publications co-authored by at least two authors. Density vision is comfortable to catch a glimpse of the author's general structure and highlights the most significant authors in this area (Anneboina & Kavi Kumar, 2017). For this purpose, the density as mentioned above maps based on network data connected with co-author items is used. Thus, each point on the item density display has a color that indicates the item's consistency at that point. By default, they are blue, green, and yellow. The greater the number of elements around a point and the greater the weight of adjacent elements, the closer the point color is to yellow (Eck & Waltman, 2020).

4. Result
Data Statistics

Data statistics are used to see the difference in the number of articles published each year to see whether there is an increase or decrease from the previous year's publication. In this study, Figure (2) shows the number of articles published until February 2021, and there is an increase in the interest and concern of researchers, academics, experts in researching the sustainability of tourism development, especially in Indonesia. Although studies in this area are still in progress, these results suggest a gradual increase in Scopus writing and publication each year.

The statistical data in Figure (2) is the number of articles published until February 2021. The researcher only shows the last ten years (2010-2021) because publications under 2010 are considered less covered than ten articles indexed by Scopus. Furthermore, Figure (1) shows an increase starting from 2014 and continuing to increase until 2020. A significant increase occurred in 2015-2016 with a 110% increase, then in 2017-2018 with a 78% increase. This increase indicates that research and publications on Indonesian tourism are in great demand and receive significant attention globally.

Initial statistics on the Scopus database show that more than 60 journals have contributed to the publication of 861 journal articles related to "Sustainable Tourism development of Indonesia", the display in Table (3) is a view that represents more than 42% of the articles that have been published in Scopus indexed journals. The Conference Proceedings results are published in the first and second place, while the publications in journals with the main tourism scope are not too significant. Therefore, researchers, academics and experts are suggested to send their articles to journals with the main scope in tourism to focus and develop optimally on applying theories in journals that focus on the sector. Thus, tourism can be found easily by policymakers.

Bibliometric Analysis

In the previous sub-chapter, the researcher explained that this study was inspired by the literature's methodology, namely the bibliometric study (Woolcock et al., 2011) (Sharkey & Sharples, 2008). Methods using bibliometrics have been used in specific fields of research (Bulgurcu et al., 2016)(Zahra et al., 2021), environment (Hermans et al., 2014), economics (Siponen et al., 2010) and is also used in the field of tourism (Serrano et al., 2019)(León-gómez et al., 2021).

In the bibliometric analysis that the researcher conducted on 861 articles indexed by Scopus related to "Sustainable Tourism Development of Indonesia", we analyzed the connection between articles by analyzing the frequency of other articles citing other articles related to tourism studies with specific keywords. What researchers do in finding answers to questions is by importing files into the VosViewer software. There are options to see the results of
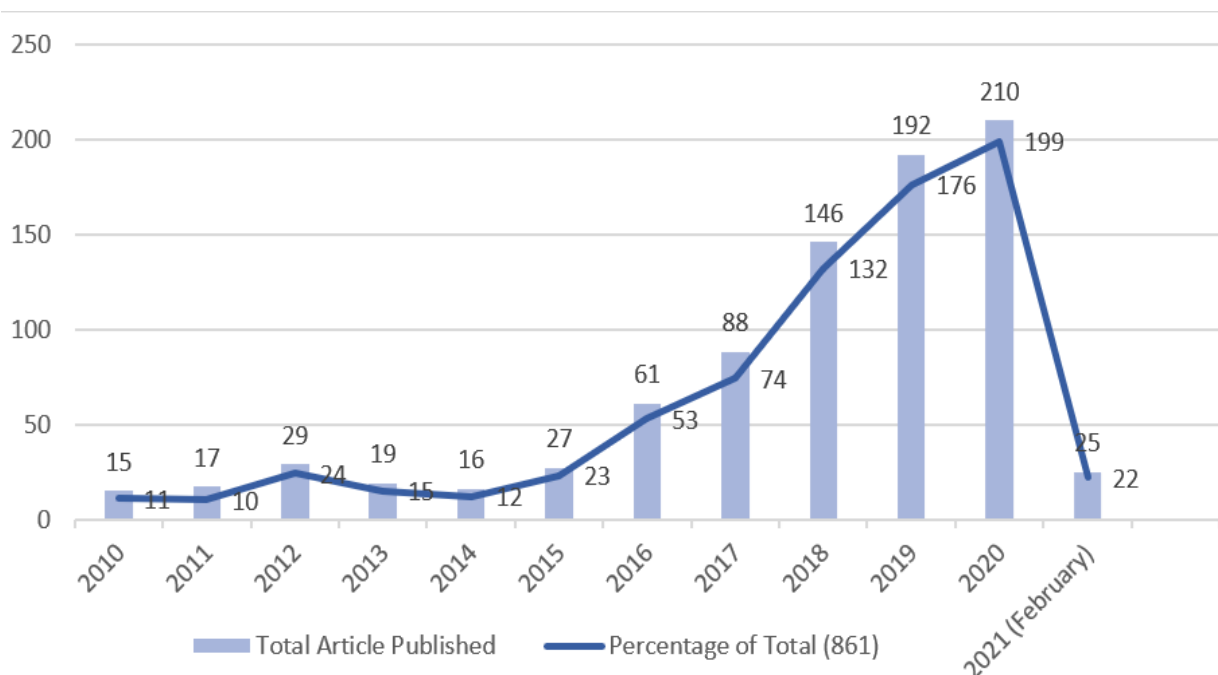
Figure 2. Articles Published by Year

the author, organization, country, many citations, keywords, and the relationship between one word get to the visualization of the data results. It can also see gaps, research that is rarely done, and research which is often done. Furthermore, these results allow researchers to explore the flow of research related to "Sustainable Tourism Development of Indonesia".

First, finding the most productive authors can be determined in Table (4). The most influential in this study, the collection of articles obtained from the Scopus database, is extracted. Then the researcher displays the results of the VosViewer processing according to the following Table (4).

Table (4) shows the 15 most influential authors who contributed to articles discussing "Sustainable Tourism Development of Indonesia". The table results from extraction, so the results displayed are the number of principal authors and co-authors of documents published. Total links strength and the table also illustrate that many documents do not necessarily indicate that other authors widely quote the document, nor does it determine that the author strongly links to other authors.

The explanation of Figure (3) shows that these network elements have been linked via a common author link based on the number of documents. The researcher used the Scopus database bibliography file to build the network to feed it as input to VosViewer and presented a peer-to-peer analysis of the number of articles published together. The elements included in this map are researchers, and the relationship between these elements is the co-writing relationship between them. The most influential researchers in writing sustainable tourism in Indonesia are Sukoco,

Setiawan, Ginting, Hampton, Cole and Wall. The 3 top researchers are non-Indonesian researchers who have contributed ideas, input, suggestions and new concepts for future Indonesian tourism through scientific publications. The result is exciting because the non-Indonesian researchers contributed by calculating 26 documents (out of the top 5 authors list).

Likewise, each link has the power to indicate the number of publications in which two, three or four researchers have been co-authors (Eck & Waltman, 2020). The total bond strength is described as a standard weight attribute that shows the bond strength with another element (Al-Ashmori et al., 2020). Then, suppose the image settings are changed to the citation. In that case, the lightest color will appear in the names Wall, Hampton, Cole s and Walpole (Figure 4), while if the setting is changed to total link strength, the light color will appear in the name Sukoco, Setiawan Abdullah (Table 4).

Figure (4) shows how many citations and document relationships in the database analysis are collected. The largest nodes are addressed to Wall g, Judge I, Towner, Hampton m.p. The node's size is not influenced by the number of documents you have, such as Ginting with ten documents, but it doesn't appear in the Figure. Unlike Towner, who has six documents and is often quoted by other authors, the node with the name Towner becomes large. Articles with that name are often cited based on the 861 articles collected.

Furthermore, although this research focuses on the study of "Sustainable Tourism Development" in Indonesia, not necessarily all authors involved come from Indonesia and universities in Indonesia, the results of our filtering and

Table 3. Top 20 Publisher Contribute to the area of Sustainable Development Tourism of Indonesia

Publisher	Records
IOP Conference Series Earth and Environmental Science	134
E3s Web of Conferences	32
GeoJournal of Tourism and Geosites	29
Journal of Physics Conferences Series	29
Journal of Environmental Management and Tourism	19
African Journal of Hospitality Tourism and Leisure	17
Annals of Tourism Research	14
International Journal of Scientific and Technology Research	13
Journal of Sustainable Tourism	13
Current Issues in Tourism	12
Asia Pacific Journal of Tourism Research	11
Biodiversitas	11
International Journal of Innovation Creativity and Change	11
Advanced Sciences Letters	7
International Journal of Applied Business and Economic Research	7
International Journal of Civil Engineering and Technology	6
Tourism Recreation Research	6
Bulletin of Indonesian Economic Studies	5
International Journal of Culture Tourism and Hospitality Research	5
International Journal of Supply Chain Management	5
Singapore Journal of Tropical Geography	5

Table 4. Top 15 Authors Contributions

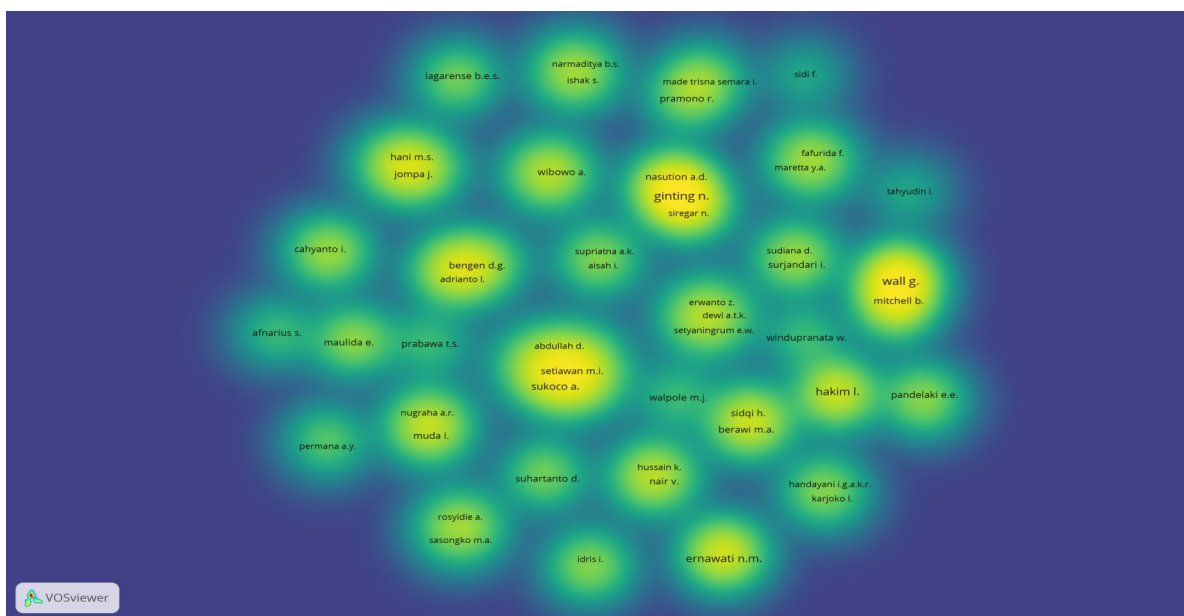| Author	Documents	Total Links Strength
Ginting n	10	9
Wall g	10	3
Hampton m.p	8	2
Cole s,	8	1
Hakim I,	7	3
Ernawati n,m	6	4
Erb m	6	0
Towner n,	6	0
Sukoco a	5	17
Dahles h	5	2
Untari d,t	5	0
Clifton j	4	0
Setiawan m, i	4	15
Walpole m,j	3	2
Kurniawan	4	6

Figure 3. Density Visualization by Co-Authorship Documents

data analysis found that 246 authors / 32% of authors came from outside Indonesia (Figure 5 and Table 5). This result illustrates that the concern and interest of researchers, academics and experts towards the practice, contribution and development of the study science "Sustainable Tourism Development of Indonesia" has received significant attention from researchers from abroad and universities outside Indonesia, in the sense that future research in studies tourism will continue to grow with a large number of contributions from outside researchers.

Then, the researcher also analyzed organizations that affected research on "Sustainable Tourism Development of Indonesia", the results are as follows (Table 6).

Table (6) shows some organizational involvement outside Indonesia, especially universities that pay attention to research "Sustainable Tourism Development of Indonesia". However, the table's appearance is only a small part of the 32% involvement of non-Indonesian authors due to the table's limitations and many organizational contributions that only have 1 document.

Second, in this study, the researcher also analyzed and categorized the main themes in the Sustainable Tourism Development of Indonesia research, the analysis of words that simultaneously emerged about the most researched topics and concepts (Gümüş et al., 2020). This analysis with VosViewer also connects the most frequently used keywords in the database collected from the Scopus database to describe a research field's conceptual framework (Rasoolimanesh et al., 2017) (Mastur et al., 2020). In conducting the analysis, the co-occurrence of the
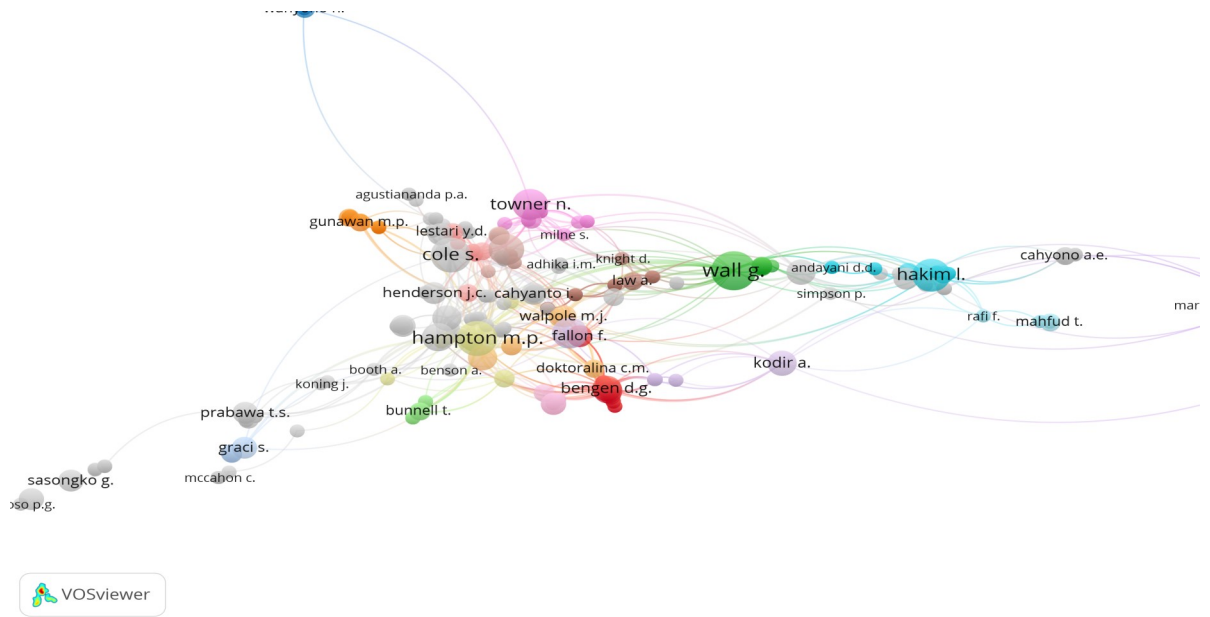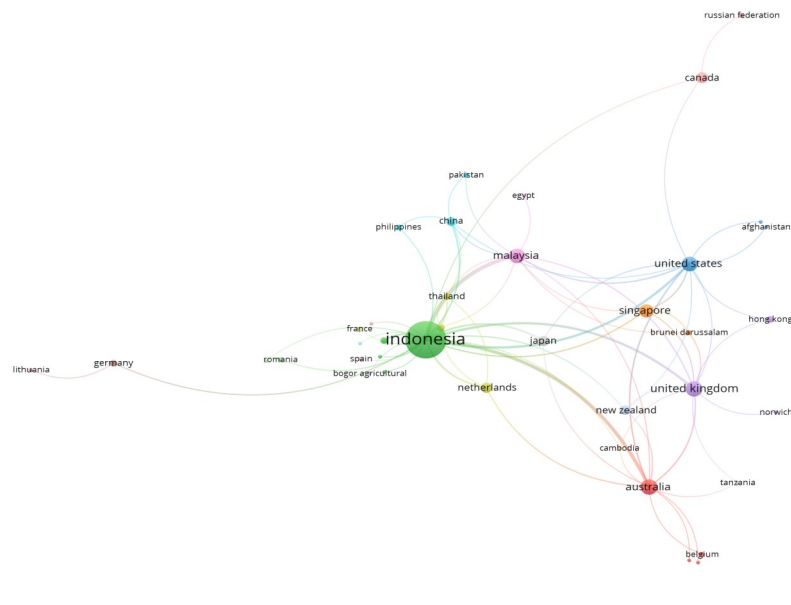
Figure 4. Citation Network

Figure 5. Countries of All Contribution

author's keywords in the Sustainable Tourism Development of Indonesia was analyzed. The results found were 280 interrelated keywords from a total of 1860 keywords analyzed. Figure 6 shows that the evolution of Indonesia's discussion on Sustainable Tourism Development is the most widely used.

Furthermore, Figure (6) also displays the linkage of author keywords and index keywords based on how often these words appear in publications. The largest nodes are Indonesia, Tourism, Development and Sustainable Tourism Development. These words represent linkages and show the relationship of events together. This node connects research with themes in which the research is interrelated. The strength of the links also shows the frequency with which they co-occur. After analyzing a total of 861 articles, the top

10 keywords used in the article are revealed. The keywords that appear most often in the literature are Indonesia, Tourism, Sustainable Tourism, Development, EcoTourism, Sustainable Development, Sustainability, Community-Based Tourism, Conservation, Sustainable Tourism Development and Culture. If large nodes have no relationship with small themes in the image, there has never been any research dealing with these themes. For example, the relationship between Indonesia, Sustainable Tourism and Sustainable Development does not have a network/connecting line with Sports Tourism, mangrove tourism, tourism resilience, sharia tourism in Indonesia and the impact of water quality and the environment on tourism in Indonesia. It means no publications published or any research that addresses these themes.

Table 5. Top 10 Countries of All Contribution

Countries	Number of Paper
Indonesia	615
United Kingdom	49
Australia	47
United States	43
Malaysia	40
Singapore	30
Canada	21
Japan	14
Netherlands	14
New Zealand	13

Table 6. Top 15 Contributing Organizations (Non-Indonesia)

Organizations	Country	Number of Paper
National University of Singapore	Singapore	18
University of Waterloo	Canada	13
University of Kent	United Kingdom	10
Nanyang Technological University	Singapore	8
Griffith University	Australia	8
The Australian National University	Australia	6
The University of Queensland	Australia	6
Universiti Utara Malaysia	Malaysia	5
Wageningen University and Research	Netherlands	5
Buckinghamshire New University	United Kingdom	5
Taylor's University Malaysia	Malaysia	5
Ryerson University	Canada	4
University of Washington	United State	3
Bowling Green State University	United State	3
London Metropolitan University	United Kingdom	3

Figure 6 also shows the research done and never done. The difference is in color on display. The blue color indicates previous research that has been done and saturated, but the yellow node is the latest research, namely between 2018-2020. There are still many research opportunities with the theme - new themes that have not been done yet. Therefore, experts and academics should conduct future studies with new themes that do not have a relationship line yet, according to the appearance in Figure 6. Then, the research can be distinguished based on the year of publication which refers to the color. In this figure, the blue color indicates the publication in 2012. The color slowly changes to green-blue, which indicates the publication with the theme according to the color has been published in the year 2014-2016 and 2018. The yellow color indicates articles published in 2020. It is necessary to pay attention to the "relationship line" and "color" to look for new themes or novelty/research gaps. If there is no relationship line, there has never been any research on this theme. Next, a structure in Table (7) shows the co-occurrence power of these keywords according to the discussion of Figure (5). The results are as follows:

Since this study's scope is Indonesian tourism's sustainability, this theme's highest occurrence of findings is.

However, Figure 6 shows that research findings on sports tourism, sharia tourism, mangrove tourism, and tourism resilience are minimal. Therefore, researchers, academics and experts should prioritize research on this theme so that tourism potential can be further developed and can generate multiple profits.

The researcher suggests to the government and policymakers to pay greater attention to policies, development efforts, investment, discussion and others on tourism potentials that have not been well developed, such as sports tourism, mangrove tourism, halal tourism and tourism resilience. Giving greater attention to this potential sector will attract tourists' interest and attention so that the increase in tourist visits continues to increase, Rupiah will continue to strengthen, and employment opportunities are increasingly wide open

5. Discussion

This study provides a structured literature review that studies the sustainability of Indonesia's tourism development. Bibliometric studies on sustainable tourism development and Indonesian tourism sustainability are found in the previous literature (Al-Ashmori et al., 2020). However, the bibliometric analysis links the sustainability of
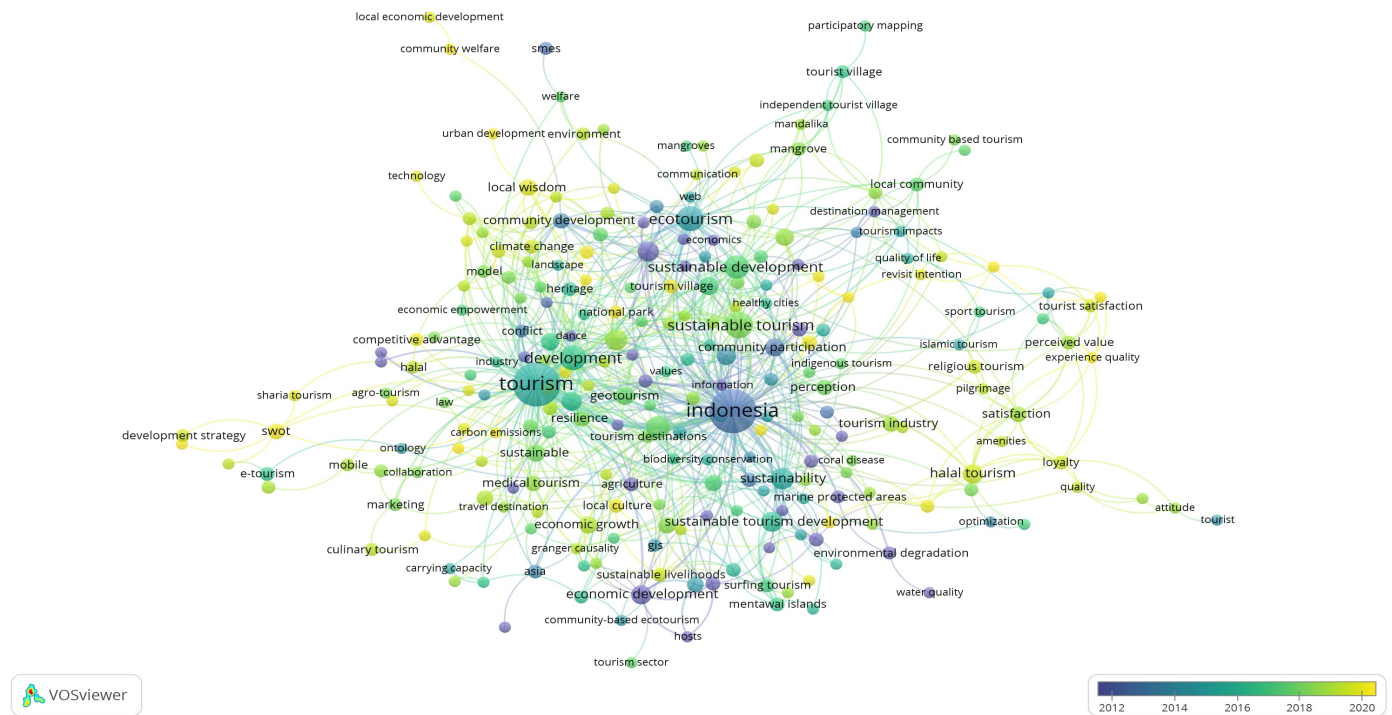
Figure 6. Co-Occurrence Network of Keywords

Table 7. The Most Frequently Used Keywords in Articles

Keywords	Occurrence
Indonesia	104
Tourism	104
Sustainable Tourism	24
EcoTourism	21
Sustainable Development	16
Tourism Development	15
Community-Based Tourism	12
Conservation	12
Sustainable Tourism Development	10
Culture	9
Economic Development	9
Halal Tourism	9
Community Participation	8
Rural Tourism	8
Empowerment	8
GeoTourism	8

tourism development and Indonesia by identifying emerging works, authors and research groups analytically and objectively. The findings' validity was narrowed by the drawbacks of keyword-based intrinsic bibliometric analysis. The researcher studied explicit operationalization and mutually limited tourism research, which produced many Indonesian tourism works. Furthermore, this research concentrates on academic studies produced by non-profit organizations, non-governmental organizations, government departments, and other institutions that Scopus indexed journals have published. Despite the methodological limitations, precise patterns and movements in the data related to each other were found, giving some interesting new ideas and scope.

First, increasing interest in the study of the sustainability of Indonesia's tourism development started in 2014 (Figure 2), similar to previous studies on sustainable tourism (Niñerola et al., 2019), confirming a new period and success from the related academic literature, particularly from 2005 to the present. On the other hand, the results have detected the breadth of methodologies and disciplines used, even among the most productive academics, which demonstrate the nature of interdisciplinary research on the effects of sustainable tourism development. It is also possible that only the work of one or two researchers is required for an organization to be classified as high performance and that the influence of the analyzed relationships may be due to co-authoring between published works.

163

Second, the geographic distribution of a total publication of 861 articles shows that 32% / 246 are non-Indonesian, consisting of works from the United Kingdom (5.7%), Australia (5.5%). These results are similar to those of (Trupp & Dolezal, 2020) regarding sustainable tourism as they show that non-southeast Asian authors dominate research located in developing regions of Southeast Asia. However, the results differ from those obtained by other bibliometric studies, which are also in the exclusive field of sustainable tourism, showing that Malaysia is the country that accounts for the most literature (Niñerola et al., 2019). This difference may be because our study also considers the territorial aspects that attract organizations, research centers, and researchers from most countries, especially in Asia and Europe (León-gómez et al., 2021).

Third, the bibliometric analysis results on sustainable tourism and Indonesian tourism show a relative concentration of several researchers' most influential works. Wall g., Hampton., and Cole are non-Indonesians authors with the highest number of publications with 26 documents. Other writers also have many publications, such as Ginting, Hakim, Ernwati, Setiawan and Sukoco, who are Indonesian writers. Later, as the field developed, many authors joined this field of research, expanding work in various fields (e.g., "Green and sustainable science and technology" and "Environmental science"). As a result, the number of citations increased by 28% in the last five years, indicating the analyzed relationships' current significance. These results are in line with those obtained by previous studies on sustainable tourism (Grilli et al., 2021).

Finally, our results suggest a pathway for further research, namely research on sustainable tourism in Indonesia, which focuses on the sustainability and development of sport tourism, mangrove tourism, tourism resilience, sharia tourism in Indonesia, and water quality and the environment on tourism in Indonesia. Therefore, our suggestions will be interesting to research because they can expand the results obtained and get serious attention to be developed.

6. Conclusion

Research on the sustainability of tourism development in Indonesia is increasing and maturing. However, there is still plenty of room for new research gaps as most of the publications that have been published have the same title, and there is still a small number of published articles. The evidence that emerges from this study shows that Indonesia's tourism development's sustainability is essential to be developed because it has enormous potential. Many focuses have not been researched and studied; with research and exploration of tourism potentials, it will be easy to develop.

On the other hand, the expansion of the research results that we find needs to be developed, the arrangement in keywords can also be expanded so that it can include trade openness, energy consumption, pollution, globalization and can also be developed with a variety of other relevant terms that can contribute to a more comprehensive review of the relationships being analyzed. Extending future research can identify many factors that can potentially change the core research area even further but adding other keywords will result in a broader set of articles and will later require

innovative bibliometric tools and analysis. Therefore, future research must consider an opportunity to analyze Indonesian tourism studies' more specific content to identify gaps and research directions in more detail and concretely. Then, empirically, this study's results have implications for other research policies and other themes to encourage Indonesian tourism sustainability.

Conflict of Interest: The authors declare no conflict of interest.

References

Aimagambetov, E., Bugubaeva, R., Bespayeva, R., & Tashbaev, N. (2017). Model of sustainable development of tourism industry in Kazakhstan (regional perspective). *Public Policy and Administration*, *16*(2), 179–197. https://doi.org/10.13165/VPA-17-16-2-02

Aipassa, J. (2020). *Penurunan Sektor di Atas 80% di Indonesia Akibat COVID-19*. Beritasatu.Com. https://www.beritasatu.com/ekonomi/662443/triwulan-ii-2020-tiga-sektor-ini-alami-penurunan-di-atas-80

Al-Ashmori, Y. Y., Othman, I., & Rahmawati, Y. (2020). Bibliographic analysis of BIM Success Factors and Other BIM Literatures using Vosviewer: A Theoretical Mapping and Discussion. *Journal of Physics: Conference Series*, *1529*(4). https://doi.org/10.1088/1742-6596/1529/4/042105

Amerta, I. M. S., Sara, I. M., & Bagiada, K. (2018). Sustainable tourism development. *International Research Journal of Management, IT and Social Sciences*, *5*(2), 248–254. https://doi.org/10.31580/apss.v2i3.327

Anneboina, L. R., & Kavi Kumar, K. S. (2017). Economic analysis of mangrove and marine fishery linkages in India. *Ecosystem Services*, *24*, 114–123. https://doi.org/10.1016/j.ecoser.2017.02.004

Arief, K. (2020). *Kasus Pertama Covid-19 di Indonesia*. Detik.News.Com. https://news.detik.com/berita/d-4991485/kapan-sebenarnya-corona-pertama-kali-masuk-ri

Asmelash, A. G., & Kumar, S. (2019). Assessing progress of tourism sustainability: Developing and validating sustainability indicators. *Tourism Management*, *71*(September 2018), 67–83. https://doi.org/10.1016/j.tourman.2018.09.020

Bell, S., & Morse, S. (2008). *Sustainability Indicators, Measuring the Immeasurable?* (2nd ed.). Routledge. https://www.routledge.com/Sustainability-Indicators-Measuring-the-Immeasurable/Bell-Morse/p/book/9781844072996

BPS. (2020). *Kunjungan Wisatawan Mancanegara*. Bps.Go.Id. https://www.bps.go.id/subject/16/pariwisata.html#subjekViewTab3

Buckley, R. (2012). Sustainable Tourism:Research and Reality. *Annals of Tourism Research*, *39*(2), 528–546. https://doi.org/10.1016/j.annals.2012.02.003

Budimanta, A. (2019). Sektor Unggulan Pemerintah. *Komine Ekonomi Industri Nasional (KEIN)*. https://ekonomi.bisnis.com/read/20190715/9/1124317/4-sektor-andalan-pemerintahan-jokowi-5-tahun-ke-depan-versi-kein

Bulgurcu, B., Cavusogu, H., & Benbasat, I. (2016). Information Security Policy Compliance: An Empirical Study of Rationality-

Based Beliefs and Information Security Awareness. *Management Information Systems Research Center*, *34*(3), 523–548. http://www.jstor.org/stable/25750690

Cucculelli, M., & Gof, G. (2015). Does sustainability enhance tourism destination competitiveness? Evidence from Italian Destinations of Excellence. *Journal of Cleaner Production*. https://doi.org/10.1016/j.jclepro.2014.12.069

de Jesus, A., Antunes, P., Santos, R., & Mendonça, S. (2016). Eco-innovation in the transition to a circular economy: An analytical literature review. *Journal of Cleaner Production*, *172*, 2999–3018. https://doi.org/10.1016/j.jclepro.2017.11.111

Eck, N. J. Van, & Waltman, L. (2020). VOSviewer Manual Version 1.6.15. In *University of Leiden* (Vol. 1, Issue April). University of Leiden. https://doi.org/10.1007/978-3-540-78646-7_21

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. In *International Journal of Production Economics* (Vol. 162). Elsevier. https://doi.org/10.1016/j.ijpe.2015.01.003

Falagas, M. E., Pitsouni, E. I., Malietzis, G. A., & Pappas, G. (2008). Comparison of PubMed, Scopus, Web of Science, and Google Scholar: strengths and weaknesses. *The FASEB Journal*, *22*(2), 338–342. https://doi.org/10.1096/fj.07-9492lsf

Farzanegan, M. R., Gholipour, H. F., Feizi, M., Nunkoo, R., & Andargoli, A. E. (2020). International Tourism and Outbreak of Coronavirus (COVID-19): A Cross-Country Analysis. *Journal of Travel Research*. https://doi.org/10.1177/0047287520931593

Fatimah, S., & Ayu, S. K. (2020). Rural Tourism Development : Institution , Disaster and Communication. *IOP Conference Series: Earth and Environmental Science*. https://doi.org/10.1088/1755-1315/466/1/012023

Goeltom, V. A. H., Pramono, R., & Purba, J. T. (2020). The Challenges of Expansion , Ethnicity and Religion toward Tourism Development in Indonesia. *European Journal of Molecular & Clinical Medicine*, *7*(06), 2141–2156.

Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: a rapid assessment of COVID-19. *Journal of Sustainable Tourism*, *0*(0), 1–20. https://doi.org/10.1080/09669582.2020.1758708

Grilli, G., Tyllianakis, E., Luisetti, T., Ferrini, S., & Turner, R. K. (2021). Prospective tourist preferences for sustainable tourism development in Small Island Developing States. *Tourism Management*, *82*(June 2020), 104178. https://doi.org/10.1016/j.tourman.2020.104178

Gümüş, S., Bellibaş, M. Ş., Gümüş, E., & Hallinger, P. (2020). Science mapping research on educational leadership and management in Turkey: a bibliometric review of international publications. *School Leadership and Management*, *40*(1), 23–44. https://doi.org/10.1080/13632434.2019.1578737

Hall, C. M. (2019). Constructing sustainable tourism development: The 2030 agenda and the managerial ecology of sustainable tourism. *Journal of Sustainable Tourism*, *27*(7), 1044–1060. https://doi.org/10.1080/09669582.2018.1560456

Hermans, L., Cunningham, S., & Slinger, J. (2014). The usefulness of game theory as a method for policy evaluation. *Evaluation*, *20*(1), 10–25. https://doi.org/10.1177/1356389013516052

Higgins-Desbiolles, F., Carnicelli, S., Krolikowski, C., Wijesinghe, G., & Boluk, K. (2019). Degrowing tourism: rethinking tourism. *Journal of Sustainable Tourism*, *27*(12), 1926–1944. https://doi.org/10.1080/09669582.2019.1601732

Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences of the United States of America*, *102*(46), 16569–16572. https://doi.org/10.1073/pnas.0507655102

Jamal, T., & Budke, C. (2020). Tourism in a world with pandemics: local-global responsibility and action. *Journal of Tourism Futures*, *6*(2), 181–188. https://doi.org/10.1108/JTF-02-2020-0014

León-gómez, A., Ruiz-palomo, D., Fernández-gámez, M. A., & García-revilla, M. R. (2021). Sustainable Tourism Development

and Economic Growth : Bibliometric Review and Analysis. *Sustainability (Switzerland)*, *13*(4), 1–20. https://doi.org/ http://doi.org/ 10.3390/su13042270 Academic

Li, Z. C., Huang, H. J., & Yang, H. (2020). Fifty years of the bottleneck model: A bibliometric review and future research directions. *Transportation Research Part B: Methodological*, *139*, 311–342. https://doi.org/10.1016/j.trb.2020.06.009

Liao, H., Tang, M., Li, Z., & Lev, B. (2019). Bibliometric analysis for highly cited papers in operations research and management science from 2008 to 2017 based on Essential Science Indicators. *Omega (United Kingdom)*, *88*, 223–236. https://doi.org/10.1016/j.omega.2018.11.005

Liu, X. (2013). Full-Text Citation Analysis : A New Method to Enhance. *Journal of the American Society for Information Science and Technology*, *64*(July), 1852–1863. https://doi.org/10.1002/asi

Nasution, D. A., Erlina, E., & Muda, I. (2020). Dampak Pandemi Covid-19 Terhadap Perekonomian Indonesia. *Jurnal Benefita*, *5*(2), 212–224. https://doi.org/DOI : 10.22216/jbe.v5i2.5313

Niñerola, A., Maria-vict, S., & Hern, A. (2019). Tourism Research on Sustainability : A Bibliometric Analysis. *Sustainability (Switzerland)*, *11*, 1–17. https://doi.org/10.3390/su11051377

Noyons, E. C. M., Moed, H. F., & Luwel, M. (1999). Combining mapping and citation analysis for evaluative bibliometric purposes: A bibliometric study. *Journal of the American Society for Information Science*, *50*(2), 115–131. https://doi.org/10.1002/(sici)1097-4571(1999)50:2<115::aid-asi3>3.3.co;2-a

Olivia, S., Gibson, J., & Nasrudin, R. (2020). Indonesia in the Time of Covid-19. *Bulletin of Indonesian Economic Studies*, *56*(2), 143–174. https://doi.org/10.1080/00074918.2020.1798581

Pan, X., Yan, E., Cui, M., & Hua, W. (2018). Examining the usage, citation, and diffusion patterns of bibliometric mapping software: A comparative study of three tools. *Journal of Informetrics*, *12*(2), 481–493. https://doi.org/10.1016/j.joi.2018.03.005

Pendit, P. L. (2006). Ragam Teori Informasi. *Eprints*, *September*, 16–21. http://eprints.rclis.org/10294/1/Ragam_Teori_Informasi.pdf

Phelan, A. A., Ruhanen, L., Mair, J., Anya, A., Ruhanen, L., Mair, J., Phelan, A. A., Ruhanen, L., & Mair, J. (2020). Ecosystem services approach for community- based ecotourism : towards an equitable and sustainable blue economy. *Journal of Sustainable Tourism*, *0*(0), 1–21. https://doi.org/10.1080/09669582.2020.1747475

Prawoto, N., Purnomo, E. P., & Zahra, A. A. (2020). The Impacts of Covid-19 Pandemic on Socio-Economic Mobility in Indonesia. *International Journal of Economics and Business Administration*, *8*(3), 57–71. https://doi.org/10.35808/ijeba/486

Priyanto, A., Purnomo, E. P., Andoko, B. W., Khairina, E., & Fadhlurrohman, M. I. (2020). The Impact of Covid-19 on Localtourism Sector and Income. *MIMBAR : Jurnal Sosial Dan Pembangunan*, *36*(2), 383–390. https://doi.org/10.29313/mimbar.v36i2.6033

Purnomo, E. P., Loilatu, M. J., Nurmandi, A., Salahudin, Qodir, Z., Sihidi, I. T., & Lutfi, M. (2021). How Public Transportation Use Social Media Platform during Covid-19: Study on Jakarta Public Transportations' Twitter Accounts? *Webology*, *18*(1), 1–19. https://doi.org/10.14704/WEB/V18I1/WEB18001

Purnomo, E. P., Ramdani, R., Agustiyara, Tomaro, Q. P. V., & Samidjo, G. S. (2019). Land ownership transformation before and after forest fires in Indonesian palm oil plantation areas. *Journal of Land Use Science*, *14*(1), 37–51. https://doi.org/10.1080/1747423X.2019.1614686

Purnomo, E. P., Ramdani, R., Salsabila, L., & Choi, J. W. (2020). Challenges of community-based forest management with local institutional differences between South Korea and Indonesia. *Development in Practice*, *0*(0), 1–12. https://

doi.org/10.1080/09614524.2020.1749561

Rasoolimanesh, S. M., Jaafar, M., Kock, N., & Ahmad, A. G. (2017). The effects of community factors on residents' perceptions toward World Heritage Site inscription and sustainable tourism development. *Journal of Sustainable Tourism*, *25*(2), 198–216. https://doi.org/10.1080/09669582.2016.1195836

Rasyid, A. (2019). Sustainable Development of Halal Tourism in Indonesia: Opportunities and Challenges. In *European Union and Library*. https://doi.org/10.4108/eai.26-1-2019.2283271

Rosana, F. C. (2021). *Pertumbuhan Ekonomi Indonesia tahun 2020*. Bisnis.Tempo.Co.Id. https://bisnis.tempo.co/read/1429918/bps-pertumbuhan-ekonomi-indonesia-2020-207-persen

Sachs, J. D. (2015). *The Age of Sustainable Development*. Columbia University Press.

Sahu, S., Sindhu, N. J., & Sharma, P. K. (2014). Review on Solid Waste Management of Art. *International Journal of Innovative Research and Development*, *3*(3), 261–268.

Sánchez, A. D., de la Cruz Del Río Rama, M., & García, J. Á. (2017). Bibliometric analysis of publications on wine tourism in the databases Scopus and WoS. *European Research on Management and Business Economics*, *23*(1), 8–15. https://doi.org/10.1016/j.iedeen.2016.02.001

Scheffler, M., & Brunzel, J. (2020). Destructive leadership in organizational research: a bibliometric approach. *Scientometrics*, *125*(1), 755–775. https://doi.org/10.1007/s11192-020-03621-3

Serrano, L., Sianes, A., & Ariza-Montes, A. (2019). Using bibliometric methods to shed light on the concept of sustainable tourism. *Sustainability (Switzerland)*, *11*(24). https://doi.org/10.3390/SU11246964

Shah, S. H. H., Lei, S., Ali, M., Doronin, D., & Hussain, S. T. (2019). Prosumption: bibliometric analysis using HistCite and VOSviewer. *Kybernetes*, *49*(3), 1020–1045. https://doi.org/10.1108/K-12-2018-0696

Sharkey, S., & Sharples, A. (2008). From the Beginning: Negotiation in community evaluation. *Evaluation*, *14*(3), 363–380. https://doi.org/10.1177/1356389008090860

Siponen, M., Pahnila, S., & Mahmood, M. A. (2010). Compliance with information security policies: An empirical investigation. *Computer*, *43*(2), 64–71. https://doi.org/10.1109/MC.2010.35

Sun, J., & Yuan, B. Z. (2020). Mapping of the world rice research: A bibliometric analysis of top papers during 2008–2018. *Annals of Library and Information Studies*, *67*(1), 56–66.

Suntikul, W., Pratt, S., Kuan, W. I., Wong, C. I., Chan, C. C., Choi, W. L., & Chong, O. F. (2016). Impacts of tourism on the quality of life of local residents in Hue, Vietnam. *Anatolia: An International Journal of Tourism and Hospitality Research*, *27*(4), 405–420. https://doi.org/10.1080/13032917.2016.1138234

Tang, M., Liao, H., Wan, Z., Herrera-Viedma, E., & Rosen, M. A. (2018). Ten years of Sustainability (2009 to 2018): A bibliometric overview. *Sustainability (Switzerland)*, *10*(5), 1–21. https://doi.org/10.3390/su10051655

Trupp, A., & Dolezal, C. (2020). Tourism and the sustainable development goals in Southeast Asia. *Austrian Journal of South-East Asian Studies*, *13*(1), 1–16. https://doi.org/10.14764/10.ASEAS-0026

UNWTO. (2017). *Defenition of Sustainable Development of Tourism*. United Nations Worlds Tourism Organization. http://sdt.un-wto.org/content/ about-us-5.

UNWTO. (2020). *Impact Assessment of the Covid-19 Outbreak on International Tourism*. UNWTO.

Vehbi, B. O. (2012). *A Model for Assessing the Level of Tourism Impacts and Sustainability of Coastal Cities* (Strategies). Intechopen. https://doi.org/10.5772/38549

Wang, X., Xu, Z., & Škare, M. (2020). A bibliometric analysis of Economic Research-Ekonomska Istraživanja (2007–2019). *Economic Research-Ekonomska Istrazivanja* , *33*(1), 865–886. https://doi.org/10.1080/1331677X.2020.1737558

Woolcock, M., Bamberger, M., & Rao, V. (2011). Using Mixed Methods in Monitoring and Evaluation: Experiences from International Development. *SSRN Electronic Journal*, *October*. https://doi.org/10.2139/ssrn.1545914

Yoeti, O. A. (2000). *Perencanaan dan Pengembangan Pariwisata*. Pradya Paramita.

Yoopetch, C., & Nimsai, S. (2019). Science mapping the knowledge base on sustainable tourism development, 1990-2018. *Sustainability (Switzerland)*, *11*(13). https://doi.org/10.3390/su11133631

Zahra, A. A., Nurmandi, A., Tenario, C. B., Rahayu, R., Benectitos, S. H., Mina, F. L. P., & Haictin, K. M. (2021). Bibliometric Analysis of Trends in Theory-related Policy Publications. *Emerging Science Journal*, *5*(1), 96–110. https://doi.org/10.28991/esj-2021-01261